RESPONSE AND REQUEST FOR RECONSIDERATION

Support.

Support for the upper limit of the total amount of dispersants of 12 percent by weight, in claims 1 and new claim 13, is found on page 9 at line 23.

Support in claims 1 and 13 for the more particular identity of component (b-1) is found on page 6, first paragraph and page 6 line 34.

In claims 1 and 13, the minimum amount of (b-2) the Mannich dispersant is restored to its original value of 0.5 weight percent, in view of newly provided data, presented below.

New claim 13, which does not specifically recite (c), the solvent, finds support on page 11 at line 32.

Response.

In the previous office action, the Examiner had rejected all claims as made obvious by Blythe (5,264,005) in view of Chamberlin (6,242,394). The Examiner had acknowledged that Applicants have compared their formulations against the closest prior art, namely, Blythe, but objected that the unexpected results had not been demonstrated across the scope of the claims.

In claims 1 and 13, the identity of component (b-1) is amended to be reasonably commensurate with the material tested. These claims now specify a "condensation product of a fatty hydrocarbyl monocarboxylic acid having about 12 to about 24 carbon atoms with a polyethylene polyamine." This is reasonably commensurate with the material tested, which is specifically the condensation product of isostearic acid with tetraethylene pentamine.

The Examiner had also objected that the minimum requirements for the amounts of dispersants and the aromatic amine antioxidant were below the values that were demonstrated in the Declaration of Dr. Patrick Mosier.

Dr. Mosier has conducted additional tests to address this concern, and the results are presented in the accompanying Declaration. The results, together with the results from testing reported in earlier Declarations, are summarized in the table on the following page.

Example		A	B	C	D	E	F	G	H	I	J		K★	L	M★	N★	O	P
Previous ref #:		C7	C2	C3	C8	C1	C10	C11	C4	C5	C6			C9			Ex1	Ex2*
Mat'l, %	**Claimed**																	
Mineral oil (a)		83.7	92	92	91	83.7	92	88.25	84	89	88		89.2	90	89.2	87.1	87	47
Cond'n prod **(b-1)**	2.5-8	4.3	–	–	0.5	4.3	3	5	–	5	–		2.8	8	6	6	5	4.8
Mannich dispt. **(b-2)**	0.5-8	5.28	7.04	–	7.04	–	2.64	5.28	–	–	5.28		5.28	0.88	2.64	5.28	5.28	5.28
Ex. A-8 Blythe										6	6							
Aminophenol		3.6		4.8		7.2			9.6									
Total dispts	7.5–12	13.18	7.04	4.8	7.54	11.5	5.64	10.28	9.6	11	11.28		8.8	8.88	8.8	12	10.28	10.08
Solvent*(c)																		40* virtual
AmineAO**(d)**	0.8-2	–	–	–	0.5	–	2	0.75	–	–	–		2	1	2	0.9	2	2
%N	0.25-0.75	0.38	0.09	0.05	0.14	0.34	0.30	0.41	0.09	0.35	0.42		0.32	0.55	0.49	0.48	0.47	0.65
TEOST (mg total)		28.2	88.4	76.3	59.6	57.4	50.5	43.8	39.4	37	36.1		**31.6**	**31.2**	**27.1**	**12.9**	**7.3**	**0.3**

(a) plus a small amount of diluent oil present in the Mannich dispersant (12%) and/or the aminophenol (40%) not included in the amounts listed for those components.

★ Examples from the current Declaration of Dr. Patrick Mosier.

* Run with reduced mineral oil content to simulate the presence of solvent, which was not actually included, as discussed.

In summary, unexpected improved performance in the TEOST deposit test is revealed by results of 32 mg deposits and less. This result is obtained only with the materials of the present invention, at concentrations of (b-1) (condensation product) as low as 2.8% (but not 0.5%), which is reasonably commensurate with 2.5%; (b-2) (Mannich dispersant) as low as 0.88% (but not in formulations in which this component is missing), which is reasonably commensurate with 0.5%; and (c) (aromatic amine antioxidant) as low as 0.9% (but not at 0.75%), which is reasonably commensurate with 0.8%.

The only exception to this observation lies in the single example ("A") which used an excessively large amount of total dispersants, 13.18%. This example also gave good TEOST results. It appears that, at very high total dispersant levels, the effect of the dispersant may overwhelm other considerations such as the presence of amine antioxidant, at least for this particular test. Therefore, the present invention is particularly effective and reveals itself in formulations containing up to total dispersant concentration of about 12%. An upper limit of 12% has now been incorporated into each of the independent claims.

For the foregoing reasons, favorable consideration and allowance of all the present claims is solicited.

A further word is appropriate with regard to item P, formerly designated Ex. 2. As discussed in the previous response, this example was run with a reduced amount of mineral oil relative to the other components to simulate the presence of 40% volatile combustible solvent. This amount of solvent was not actually included because, as previously discussed, its presence is physically incompatible with the MHT TEOST test. The actual amounts of components for that example, re-normalized to 100%, are (a) mineral oil, 78.8%, (b-1) 8%; (b-2) 8.8%; (d) 3.3%; and total amount of dispersants, 16.6%. The relatively higher amounts of dispersants may be in part responsible for the unusually good test result.

Although the Examiner has acknowledged that the concentration of the solvent is unimportant and is no longer an issue, consideration of new claim 13 is nevertheless requested. The presence of solvent (while not precluded by the language of this claim) is not specifically mentioned in claim 13, and as such the claim may represent a simplification of expression.

Conclusion.

For the foregoing reasons it is submitted that the present claims are unobvious and in condition for allowance. The foregoing remarks are believed to be a full and complete response to the outstanding office action. Therefore an early and favorable

reconsideration is respectfully requested. If the Examiner believes that only minor issues remain to be resolved, a telephone call to the Undersigned is suggested.

Any required fees or any deficiency or overpayment in fees should be charged or credited to deposit account 12-2275 (The Lubrizol Corporation).

Respectfully submitted,

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